

ABSTRACT

A method is disclosed for performing a discrete cosine transform (DCT) using a microprocessor having an instruction set that includes SIMD floating point instructions.

5 In one embodiment, the method includes: (1) receiving a block of integer data having C columns and R rows; and (2) for each row, (a) loading the row data into registers; (b) converting the row data into floating point form so that the registers each hold two floating point row data values; and (c) using SIMD floating point instructions to perform weighted-rotation operations on the values in the registers. Suitable SIMD floating point

10 instructions include the pswap, pfmul, and pfpmacc instructions. For the row-DCT, the data values are preferably ordered in the registers so as to permit the use of these instructions. For the column-DCT, two columns are preferably processed in parallel using SIMD instructions to improve computational efficiency. An intermediate buffer may be used to avoid unnecessary conversions between integer and floating point format.

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